Fedorchenko, I.M.

81905

18.6200

S/126/60/010/01/009/019
E111/E335

AUTHORS: Fedorchenko, I.M. and Kostyrko, N.V.

TITLE: Mechanism of Shrinkage in Sintering Briquettes of Metal Powders

PERIODICAL: Fizika metallov i metallovedeniye, 1960, Vol. 10, No. 1, pp 75 - 83

TEXT: Fedorchenko has developed (Refs.1-4) the concept of shrinkage as a consequence of diffusion initially in the surface and then in both surface and volume of the particles. Views on this and other concepts vary (Refs. 6-15). The present work has the object of providing further data on the influence of annealing on the specific surface and pycnometric density of powders and on briquette-shrinkage on sintering. Powders of iron and cobalt (prepared by reduction of analytical-purity oxides) and of two mixtures (respectively 0, 5% Fe; 63, 20% Co; 5, 60% Ni; 27, 15% Cr; 5, 0% Mo) were used. Nickel and molybdenum were also prepared by reduction, chromium by crushing cast metal. Fractions of powders passing through 53-micron screen holes were used. The specific surface, pycnometric density and bulk density of the powders as prepared and after annealing at

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Mechanism of Shrinkage in Sintering Briquettes of Metal Powders

800, 950, 1 000 and 1 100 °C are shown in Table 2. Porosity before and after pressing (at 2.2 or 4,4 tons/cm^2), the change in porosity, volume shrinkage and increase in briquette density is shown in Table 3 before and after annealing at 1 000 °C (metals) and 950 °C (mixtures). Values (calculated by A.I. Raychenko) of the movement of the diffusion front after heating at 800 - 1100 °C for 1, 2 and 4 hours are given in Table 4 for the cobalt diffusing into nickel and self-diffusion for cobalt and iron. Table 5 gives for the two mixtures the porosity after pressing, annealing at 950 °C, re-pressing in the cold and sintering at 1100 °C. Fig. 1 illustrates particle sintering during preliminary annealing. Fig. 2 shows a shrinkage crack in a briquette of non-annealed powder containing a cylinder of massive iron: such cracks were not observed with a similar briquette of previously annealed powder. The work showed that heterodiffusion in surface layers of particles during annealing powder mixtures reduces briquette shrinkage. Compacting of briquettes on account of elimination of internal defects and disappearance of internal porosity of particles was found to play

81905

S/126/60/010/01/009/019
E111/E335

Mechanism of Shrinkage in Sintering Briquettes of Metal Powders

a minor part in the overall compacting. The main effect is due to diffusion processes leading to rearrangement of particle surfaces and not diffusion inside particles. The authors recommend pre-annealing of metal powders to reduce shrinkage in sintering and reduce the size and deformations of the objects being made. There are 3 figures, 5 tables and 18 references: 17 Soviet and 1 English.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Cermets and Special Alloys of the Ac.Sc., Ukrainian SSR)

SUBMITTED: March 31, 1960

Card 3/3

5.9210(A)
5.5800
~~5(4)~~

68295

S/032/60/026/02/022/057
B010/B009

AUTHORS: Fedorchenko, I. M.;
Yermolovich, Yu. B.

TITLE: Determination of the Evaporation Kinetics and Vapor Tension of Metallic Powders

PERIODICAL: Zavodskaya laboratoriya, 1960, Vol 26, Nr 2, pp 177 - 179 (USSR)

ABSTRACT: A method and apparatus for determining the evaporation kinetics and vapor tension of metallic powders have been developed. The method is based upon the continuous determination of the electric conductance of a metal film condensed in a high vacuum on a cooled glass lamella. It is possible to study, on the apparatus described, the effects of the heating temperature, surface condition of the metallic powder, preliminary treatment, degree of dispersion etc. upon the evaporation kinetics. The metallic powder is evaporated (Fig 1, scheme of the apparatus) by means of a heated tungsten (or molybdenum) lamella. The evaporating surface is 2×2 cm^2. The heater is fed by means of a "Tesla" stabilizer. The above-mentioned glass lamella is situated above the evaporating surface. The metal

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Determination of the Evaporation Kinetics and Vapor Tension of Metallic Powders

S/032/60/026/02/022/057
B010/B009

vapor condenses on the glass lamella on an area which is also 2×2 cm^2. The glass lamella also carries two copper electrodes produced by evaporating copper, which serve for measuring the electric resistance of the condensed metal film. A vacuum of up to $2 \cdot 10^{-6}$ torr is produced by an RVN-20 pre-vacuum pump and a TsVL-100 diffusion pump. The apparatus described possesses two valves and two RVN-20 pumps. The distance between evaporator and glass lamella is fixed close enough to assure that sufficient metal vapor condenses but far enough to prevent irregularities from forming on the metal film surface. The distribution of the condensate is calculated from an equation (1) and can be represented graphically (Fig 2). The specific flow of the condensate is determined from the following equation:

$\xi = d\varrho \frac{d\sigma}{dt}$ (4) (d = specific gravity of the metal, ϱ = its specific electric resistivity, $\frac{d\sigma}{dt}$ = change of electric conductance of the metal film with time). The vapor tension may be calculated from Langmuir's formula (5). Measured values of the change in the electric conductance of the condensate with the

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Determination of the Evaporation Kinetics and Vapor Tension of Metallic Powders

evaporating time obtained by evaporating copper powder (reduced at 400° and glowed for half an hour at 600°) are given (Fig 3). There are 3 figures.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov Akademii nauk USSR (Institute of Metal Ceramics and Special Alloys of the Academy of Sciences of the UkrSSR)

S/073/60/026/004/005/008
B016/B054

AUTHORS: Fedorchenko, I. M. and Yermolovich, Yu. B.

TITLE: Diffusion of Chromium Through Its Oxide

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 4, pp. 429-431

TEXT: The authors wanted to determine the diffusion coefficient of chromium through its oxide. Their method (Ref. 6) permits a direct determination of the stream of chromium atoms which diffuse through the oxide and evaporate. This determination was carried out in vacuo at 1100, 1150, 1200, and 1250°C. The required oxide layer was produced by oxidation of an electrolytic chromium powder (particle diameter 50μ) in air at 700°C. It was $\sim 6.5 \cdot 10^{-5}$ cm thick. Fig. 1 shows the results of measurement of the electrical conductivity of the layer of condensed chromium atoms. The quantity of the flow of chromium atoms was determined from the inclination of the straight lines found at different temperatures. A table (p. 431) contains the diffusion coefficients D of chromium through its oxide layer calculated from the flows determined, and from

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the concentrations indicated by K. Hauffe and T. Block (Ref. 5). On the basis of this table, the authors plotted the diagram lcg D = f(1/T) (Fig. 2). The activation energy of the chromium diffusion through its oxide layer can be determined from this diagram (86 700 cal/g·atom). Thus, the authors consider the chromium diffusion through an oxide layer proved by experiment. Apparently, the diffusion rate of the chromium atoms determines the oxidation rate in chromium or strongly chromium-containing alloys. The diffusion coefficients determined by the authors are similar to those of thoron through Cr_2O_3 (Ref. 7). There are 2 figures and 7 references: 4 Soviet and 1 German.

ASSOCIATION: Institut metallokeramiki i spetssplavov AN USSR (Institute of Powder Metallurgy and Special Alloys of the AS UkrSSR)

SUBMITTED: March 5, 1959

PALLADIN, A.V., akademik; FEDORCHENKO, I.M., akademik; GULYY, M.F., akademik; BAKULIN, D.I.; MEL'NIKOV, N.P., kand.tekhn.nauk; OKERBLOM, N.O., prof., doktor tekhn.nauk; LYUBAVSKIY, K.V., prof. doktor tekhn.nauk, laureat Stalinskikh premiy; PORTNOY, N.D., kand.tekhn.nauk; TSYBAN', N.G.; KULIKOV, M.S., dotsent; AGRONOMOV, S.N., inzh.; POLYAKOV, V.A., inzh.; SHERSTYUK, V.N., inzh.

Congratulations on the publication of the issue no.100 of the "Avtomaticheskaia Svarka" journal. Avtom.svar. 14 no.7: 3-8 Jl '61. (MIRA 14:7)

1. Prezident AN USSR (for Palladin). 2. AN USSR, glavnyy uchenyy sekretar' AN USSR (for Fedorchenko). 3. AN USSR, predsedatel' redaktsionno-izdatel'skogo soveta AN USSR (for Gulyy). 4. Uchenyy sekretar' AN USSR (for Bakulin). 5. Direktor instituta "Proyektstal'konstruktsiya" (for Mel'nikov). 6. Predsedatel sektsii svarochnogo proizvodstva Tekhniko-ekonomicheskogo soveta Leningradskogo sovnarkhoza (for Okerblom). 7. Glavnyy svarshchik Uralvagonzavoda (for Portnoy). 8. Glavnyy inzh. zavoda im. Nosenko (for TSyban'). 9. Dal'nevostochnyy politekhnicheskiy institut im. V.V.Kuybysheva (for Kulikov). 10. Dal'zavod (for Agronomov, Polyakov). 11. Dal'nevostochnyy nauchno-issledovatel'skiy institut po stroitel'stvu (for Sherstyuk).

(Electric welding--Periodicals)

FEDORCHENKO, I.N., akademik

Celebration of the 250th anniversary of M.V.Lomonosov's birth at the Academy. Dop. AN URSR no.1:136-137 '62.
(MIRA 15:2)

1. AN USSR.

(Lomonosov, Mikhail Vasil'evich, 1711-1765)

PHASE I BOOK EXPLOITATION SOV/6032

Yeremenko, V. N., Resp. Ed.; I. N. Frantsevich, G. V. Samsonov, I. M. Fedorchenko, G. S. Pisarenko, V. V. Grigor'yeva, and V. I. Nizhenko, eds.

Poverkhnostnyye yavleniya v metallakh i splavakh i ikh rol' v protsessakh poroshkovoy metallurgii (Surface Phenomena in Metals and Alloys and Their Role in Powder-Metallurgy Processes) Kiyev, Izd-vo AN USSR, 1961. 213 p. 1710 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut metallokeramiki i spetsial'nykh splavov.

Ed. of Publishing House: Z. S. Pokrovskaya; Tech. Ed.: A. M. Lisovets.

PURPOSE: This collection of articles is intended for scientific research workers, engineers specializing in metals, and metallurgists. It may also be useful to advanced students at schools of higher education.

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COVERAGE: Articles of this collection discuss the role of surface phenomena in powder metallurgy processes and in processes of the strong bonding of various substances. Theoretical calculations of the surface tension of some carbides and nitrides are presented. The book also reviews modern methods for studying the surface properties of metals at high temperatures and presents data on the surface tension of refractory metals and of binary metals systems. Particular attention is given to the effect of various additions on the surface tension of metals and on the interphase tension at the boundary between metals and various refractory compounds. Data on the effect of thin metal coatings on the structural and mechanical properties of metals are also presented. No personalities are mentioned. Each article is accompanied by references, mostly Soviet.

TABLE OF CONTENTS:

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AVAILABLE: Library of Congress

SUBJECT: Metals and Metallurgy

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DV/wrc/jw
9/10/62

BR

PHASE I BOOK EXPLOITATION SOV/5954

Fedorchenko, Ivan Mikhaylovich, and Rostislav Aleksandrovich Andriyevskiy.

Osnovy poroshkovoy metallurgii (Principles of Powder Metallurgy) Kiyev, Izd-vo AN UkrSSR, 1961. 420 p. 10,000 copies printed.

Sponsoring Agency: Akademiya nauk Ukrainskoy SSR. Institut metallokeramiki i spetsial'nykh splavov.

Ed. Z. S. Pokrovskaya; Tech. Ed.: O. A. Kadashevich.

PURPOSE: This book is intended for technical and scientific research personnel working in the field of powder metallurgy or related branches of industry. It may also be used as a textbook by students specializing in powder metallurgy, metal science, and heat treatment at schools of higher education and tekhnikums.

COVERAGE: The book presents information on the theory and practice of powder-metallurgy processes. Attention is given to methods of producing metal powders, the properties of metal powders, the principles of compacting and sintering

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metal powders, problems connected with the additional processing of sintered products, and problems of safety techniques in powder metallurgy. The authors thank G. A. Vinogradov, Candidate of Technical Sciences, A. I. Raychenko, Candidate of Technical Sciences, V. V. Skorokhod, N. A. Filatova, M. Yu. Bal'shin, Candidate of Technical Sciences, B. A. Borok, Candidate of Technical Sciences, Ya. Ye. Geguzin, Professor and Doctor of Physics and Mathematics, and G. V. Samsonov, Professor and Doctor of Technical Sciences, for their comments regarding the book. There are 17 references: 8 Soviet, 5 English, 2 German, and 2 Czech.

TABLE OF CONTENTS [Abridged]:

FEDORCHENKO, I.M., akademik

Party calls us to new achievements. Nauka i zhyttia 11 no.8:14-17 Ag '61. (MIRA 14:12)

1. AN USSR, Glavnyy uchenyy sekretar' Akademii nauk USSR. (Research)

06458

S/073/60/026/005/010/019
B004/B063

186200 (also 2209)

AUTHORS: Andriyevskiy, R. A. and Fedorchenko, I. M.

TITLE: Variation of Open and Closed Porosity During the Sintering of Porous Bodies

PERIODICAL: Ukrainskiy khimicheskiy zhurnal, 1960, Vol. 26, No. 5, pp. 616-620

TEXT: The study of the variation of open and closed porosity is of great importance to the theory of powder sintering and to the efficiency of high-temperature catalysts. As the effect of temperature and duration of sintering on porosity, as well as other factors had not yet been studied, the present work is intended to make a contribution to this subject. Open and closed porosity were determined by soaking the sintered specimens with benzyl alcohol. Calculation was made using the equation suggested by G. Arthur in Ref. 2. Density was determined by a method described in Ref. 4. Fig. 1 shows a curve of the isothermal variation of the total porosity (Curves 1 and 2) and of closed porosity (Curve 3) obtained when sintering briquettes from copper powder in hydrogen at 900°C. Curve 1 refers to

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Variation of Open and Closed Porosity During the Sintering of Porous Bodies

S/073/60/026/005/010/019
B004/B063

quick heating (temperature rise to 900°C in 2-3 min). Curve 2 refers to slow heating (1.5 - 2 h). Porosity varies chiefly at the expense of open pores. The original content of closed pores was 2-3%. During heating the number of closed pores increased, and all pores were closed when porosity reached 6-8%. This rule was found to hold also for Ag, Cu, and Fe briquettes, and holds for all briquettes with an original porosity of 20% and more. Experiments with copper and iron powders have shown that a content of oxides and the use of hydrogen with an admixture of hydrogen chloride increases the number of closed pores in all briquettes with a high initial density. Text to Fig. 1: Variation of Total and Closed Porosity (Curve 3) During the Sintering of Copper Briquettes (900°C); 1: Heating for 2-3 min; 2: Heating for 1.5-2 h; 3: Porosity; 4: hrs.
There are 4 figures, 1 table, and 11 references: 8 Soviet, 2 British, and 1 Czechoslovakian.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys of the AS UkrSSR)

SUBMITTED: May 22, 1959

S/137/62/000/001/056/237
A060/A101

AUTHORS: Fedorchenko, I. M., Andriyevskiy, R. A.

TITLE: On the problem of the sintering mechanism of one-component systems

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 38, abstract 1G291 ("Poroshk. Metallurgiya", 1961, no. 1, 9 - 19 [English summary])

TEXT: Experiments with hot-pressing of the powders of Cu, Ni, Ag are described, as result of which the absence of plastic flow at sintering and the diffusion nature of shrinkage were proven. New confirmations are given of the great influence of the state of the surface layers of the powder particles upon the shrinkage. Contraction during sintering is treated as a non-stationary diffusion creep, whose variable rates are caused by the effect of geometric (change in the density of the sintered briquet) and structural variations of defectiveness factors. The status of theory relating to the quantitative laws of shrinkage is analyzed. There are 58 references. See also Referativnyy zhurnal, Metallurgiya, 1961, 5G256.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 1/1

33805
S/137/62/000/001/061/237
A060/A101

1.1600

AUTHORS: Vinogradov, O. A., Fedorchenko, I. M.

TITLE: Influence of the gaseous phase upon the powder pressing under rolling

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 39, abstract 10299 ("Poroshk. Metallurgiya", 1961, no. 1, 61 - 67, English summary)

TEXT: The rolling of metallic powders in vacuum makes it possible to obtain strips of thickness greater than under ordinary conditions; the utilization of vacuum also allows the rolling of dust-fine powders which are not manageable to roll in an air environment (for example Fe powders of fraction $< 44\mu$). The utilization of gases with low viscosity (CO_2, H_2) has a considerable effect upon the density and thickness of the rolled strips. The effect of the gaseous phase is related to the fact that the pressing of the powder under rolling in the rolls is braked by the incident counterflow of gas, which is pressed out of the space between the particles. The conditions of internal friction under rolling also depend upon the nature of the gaseous phase (the coefficient of friction in vacuum increases by several times. Thus, the

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Influence of the gaseous phase ...

utilization of vacuum (~ 1 mm Hg) makes it possible to roll fine powders, and the feed of H_2 or CO_2 into the hopper of the rolling mill may considerably increase the thickness of the strip and the mill productivity.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 2/2

S/137/61/000/012/062/149
A006/A101

AUTHORS: Fedorchenko, I.M., May, V.K.

TITLE: Hot pressing of chrome carbide powder

PERIODICAL: Referativnyy zhurnal. Metallurgiya, no. 12, 1961, 46, abstract 120326 ("Poroshk. metallurgiya", 1961, no. 2, 70 - 75, English summary)

TEXT: Hot pressing of Cr_3C_2 powder was performed in a vacuum (about 10^{-3} mm Hg) at 1,400 - 1,700°C under up to 300 kg/cm^2 pressure. Optimum holding time was 10 minutes. At 1,750°C and and 150 kg/cm^2 pressure, it was possible to obtain specimens with 0.5 - 1.0% porosity. Microstructure and electric resistivity of sintered specimens were investigated. Anomalies in the latter were observed in the case of hot pressing at 1,700°C. This is connected with the transition of Cr_3C_2 carbide into Cr_7C_3.

R. Andriyevskiy

[Abstracter's note: Complete translation]

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32791
S/137/61/000/012/069/149
A006/A101

15 2400

AUTHORS: Vinogradov, O. A., Fedorchenko, I. M.

TITLE: Experimental cermet rolling mill

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 12, 1961, 59, abstract 12I350 ("Poroshk. metallurgiya, 1961, no. 2, 101 - 107, English summary)

TEXT: A mill is described for the rolling of powders. It was developed and designed according to the technical directives of IMSS, AS UkrSSR. The roughing mill with 300-mm-diameter rolls is equipped with an exchangeable set of rolls of 150 and 250 mm in diameter and 250 and 300 mm carrel length. The rolls rotate at 1 - 15 rpm. The stand can be mounted in both horizontal and vertical position, and hot rolling can be performed in a shielding medium. The rolls nishing stand is approximately analogous to the roughing stand, but the barrel length is 250 mm only. The second finishing stand is intended for condensating rolling and for the manufacture of pore-less rolled material. The mill is equipped with friction winding devices. The assortment of the mill are porous and

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Card 2/2

11600 1521

33800
S/137/62/000/001/050/237
A060/A101

AUTHOR: Fedorchenko, I. M., Dmitriyeva, M. A.

TITLE: Investigation of certain properties of nickel aluminide

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 1, 1962, 37, abstract 10280 ("Poroshk. metallurgiya", 1961, no. 3, 47 - 52 [English summary])

TEXT: Nickel aluminide was prepared by smelting in a high-frequency induction furnace in an argon atmosphere and by heating with currents induced directly in the charge without an intermediary heater. A special set-up has made it possible to carry out the founding of ingots after the smelting down of the charge. Up to 1,100°C the specimens of cast aluminum were practically not oxidized at all. It is noted that homogenizing annealing raises the scale resistance of the specimens. Measurement of hot-hardness at 800 - 1,100°C has shown that the highest hardness is demonstrated by specimens hot-pressed in air. Deviation from the stoichiometric composition leads to a drop in the hot-hardness, particularly in the case of an increase in the Ni content. The effect of the tempering duration upon the hot-hardness was also investigated.

A. Andriyevskiy

[Abstracter's note: Complete translation]

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22976

1.6000 also 1045, 1555, 1454

S/180/61/000/003/004/012
E021/E135

AUTHORS: Andriyevskiy, R.A., and Fedorchenko, I.M. (Kiyev)

TITLE: Influence of small additions of nickel and cobalt on the sintering of iron powder

PERIODICAL: Izvestiya Akademii nauk SSSR, Otdeleniye tekhnicheskikh nauk, Metallurgiya i toplivo, 1961, No.3, pp. 50-54

TEXT: Powdered iron (0.03% C, 0.002 Si, 0.4 Mn, 0.043 S, 0.002 P) was added to solutions of nickel or cobalt nitrate with continuous evaporation of moisture. After evaporation the additions were precipitated on the surface of the particles. After mixing the powder and adding pure iron, the oxides were reduced in hydrogen at 800 °C for one hour. The density of pressed briquettes was 5.30 - 5.35 g/cm^3 and sintering was carried out in purified hydrogen. Fig.1 shows the influence of Ni and Co content, together with the effect of temperature and time (τ, min) on the densification ($\Delta V/V$, %) during the sintering of iron powder. The addition of nickel considerably increased the densification and cobalt had a much less marked effect. It was shown that the use of a low temperature preliminary heat treatment (200-300 °C) enables

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S/180/61/000/003/004/012
E021/E135

Influence of small additions of nickel and cobalt on the sintering of iron powder

even more intensive densification in the subsequent sintering process. Fig.3 shows the influence of the initial porosity (x-axis) on the densification (y-axis) on sintering at 1200 °C for 2 hours. Curve 1 is for Fe + 5% Ni obtained by precipitation from nitrate, curve 2 is for a mechanical mixture of Fe + 5% Ni, and curve 3 for powdered Fe. It can be seen that the effect of Ni was maintained over a wide range of initial porosity. The chemical method of mixing gave better results than the mechanical method. It is proposed that the decisive role in the sintering is played by defects in the surface layers of the powdered particles. A good addition must have a greater coefficient of diffusion than the basic metal and must have a lower heat of evaporation. In this case a defect structure is formed in the surface layers of the particles as a result of mutual diffusion. It was shown by calculation that the concentration of vacancies arising from the unequal diffusion rates in Fe + 5% Ni is about 1%. With increase in time the concentration of vacancies decreases.

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S/180/61/000/003/004/012
E021/E135

Influence of small additions of nickel and cobalt on the sintering of iron powder

There are 3 figures and 19 references: 14 Soviet, 1 Czech, 2 German and 2 English. The English language references read as follows:

Ref.10: J.M. Fedortchenko and R.A. Andriyevskiy.
Powder Metallurgy, London, 1959, 3, p. 147.

Ref.13: L. Harrison and S. Marton.
Symposium on Powder Metallurgy, London, 1956, p. 159.

SUBMITTED: June 27, 1960

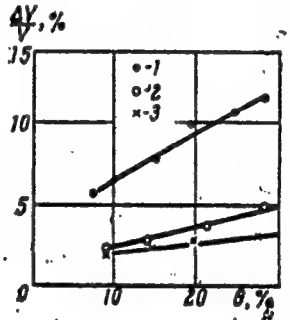

Fig. 3

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S/137/62/000/003/062/191
A006/A101

15 2400

AUTHORS: Skorokhod, V. V., Fedorchenko, I. M., Panfilov, Yu. A.

TITLE: On the calculation of the concentration dependence of electric conductivity and magnetic permeability of bi-phase cermet alloys

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 41, abstract 3G281 ("Poroshk. metallurgiya", 1961, no. 4, 42 - 46, English summary)

TEXT: The applicability of the Odelevskiy and Landau and Lifshits formulae to calculate the properties of the type of conductivity was checked on Fe-Cu and Ni-Ag compositions. Both formulae are in a satisfactory agreement with experimental data on electric conductivity and magnetic permeability. The authors analyze the causes of deviations from the theory which are connected with the formation of partially matrix systems or the imperfection of interparticle contacts. The authors present also results of investigating electric conductivity in the Cu-W system.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 1/1

S/137/62/000/003/065/191
A006/A101

1/1600

AUTHORS: Fedorchenko, I. M., Vinogradov, G. A., Katrus, O. A.

TITLE: Investigating the properties of strips manufactured from iron powder

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 41, abstract 3G285 ("Poroshk. metallurgiya", 1961, no. 4, 70 - 79, English summary)

TEXT: This is a literature review of data on the optimum density of raw strips, the duration of strip sintering, and anisotropy of properties. Experiences have shown that the optimum porosity of raw Fe-powder strips is 20 - 25%; σ_b and σ_{bi} are about 0.5 and 2.8 kg/mm , respectively. Tests were made with rolled specimens, cut out along and across the direction of rolling. The tests show that σ_{bi} was 3.2 kg/mm^2 in the former and 2.5 kg/mm^2 in the latter case (porosity 25%). During sintering the substantial increase in strength is exhausted at holding for about 10 minutes. The effect of compressive rolling on the physical and mechanical properties was investigated. The change in the specific weight ceases at the reduction in height of the strips by about 40%. From this moment approximately the strength begins to decrease and elongation of grains is observed in the microstructure. Conditions of preliminary sintering have a slight effect on the

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S/137/62/000/003/065/191
A006/A101

Investigating the properties of strips...

mechanical properties of non-porous strips.

R. Andriyevskiy

[Abstracter's note: Complete translation]

Card 2/2

36435

S/137/62/000/003/072/191
A006/A101

15.2400

AUTHORS: Fedorchenko, I.M., Filatova, N.A., Sleptsova, N.P., Dmitrieva, M.A., Yermolin, Yu.N., Voynitskiy, A.I., Kiselev, V.P.

TITLE: Refining of molten sodium with the aid of cermet filters

PERIODICAL: Referativnyy zhurnal, Metallurgiya, no. 3, 1962, 44 abstract 30305 ("Poroshk. metallurgiya", 1961, no. 4, 98 - 102, English summary)

TEXT: For the refining of molten Na from oxide compounds, cermet filters were used made of reduced Fe-powder (a mixture of АПЖ(APZhM) grade fractions). The filters of about 40% porosity were manufactured in the form of beakers 32 and 24 mm in diameter, and 75 mm high. The blanks pressed under 2 t/cm^2 pressure were sintered in converted gas atmosphere at 1200°C for 2 h. The hydraulic characteristics of Fe-filters are given (gas and oil permeability); the degree of refining of the filters was 5μ. As a result of using cermet filters the Na purity was raised and the quality of Ti, obtained by the method of sodium-thermal reduction, was improved. The filters have been reliably operating for over one year. The efficiency of the filters is about 0.12 kg/cm^2 · hour at a pressure

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Card 2/2

Refining of molten....

drop of about 1.2 atm.

S/137/62/000/003/072/191
A006/A101

R. Andriyevskiy

[Abstracter's note: Complete translation]

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25159

15.2530

S/021/61/000/004/011/013
D213/D303

AUTHORS: Skorokhod, V.V., and Fedorchenko, I.M.

TITLE: On the sintering of two-phase powder systems

PERIODICAL: Akademiya nauk Ukrayins'koyi RSR. Dopovidi, no. 4, 1961, 486 - 489

TEXT: The authors carried out an experimental investigation on the kinetics of the growth of interphase contacts in systems containing tungsten, and on the existence of correlations between the angle of wetting and the magnitude of interphase contacts. Experiments were carried out using various systems: Cu - W, (Cu + 5 % Ni) - W, Cu-ZrC, (Cu + 5 % Ni) - ZrC, in order to determine the existence of correlation between the sintering of the system and the angle of wetting. Equilibrium is not attained in practice, hence the equilibrium "angle of solid wetting" is evaluated from the formula

$$\frac{y}{R} \simeq \sqrt{\frac{x}{2} \cdot \frac{1 - T(t)}{a - cT(t)}}, \qquad (4)$$

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On the sintering of ... S/021/61/000/004/011/013
D213/D303

where R is the radius of the particles, $\varkappa = 1 + \cos\theta$, θ is the angle of solid wetting,

$$T(t) = \exp\left(-\frac{6\sigma_B}{R}\sqrt{-\Delta}\int_0^t \frac{dt}{\eta}\right)$$

σ_B is the surface tension of the more fusible phase, η is the viscosity, $a = \sqrt{-\Delta} + 0.5$, $c = 0.5 - \sqrt{-\Delta}$, $-\Delta = 0.25 - \varkappa/8$ [Abstractor's note: y is not defined]. For constant sintering time $T(t) = \text{const}$, $\varkappa \sim (y/R)^2$. The conductivity is measured on an MD-6 bridge. The experimental results are shown in the table, and show satisfactory agreement with the theoretical values. The kinetic growth of contact in the system Cu - W was investigated at temperatures ranging from 850° - 1050°. The curves obtained show a good general resemblance to the curves for the kinetic growth of conductivity at these temperatures. From formula (4) a theoretical treatment is developed. In the case $\varkappa = 2\sqrt{-\Delta}$, (4) becomes

Card 2/5

On the sintering of ...

$$\frac{V}{R} = \sqrt{\frac{2\tau}{4 + \tau}} \qquad (5)$$

where

$$\tau = \frac{6\sigma_B}{R} \int_0^t \frac{dt}{\eta}$$

is the sintering time. In the first approximation

$$\eta(t) = \eta_0 + \zeta t. \qquad (6)$$

From Nabarro's theory of strength and the theory of the diffuse growth of block crystals the relationship for $\eta(t)$ is evaluated.

$$\eta_0 = \frac{\sqrt{2}}{16} \frac{A_0^2 kT}{\delta^3 D}, \qquad \zeta = \frac{\sqrt{2}}{16} \frac{\sigma}{\delta}. \qquad (7)$$

where A_0 is the linear dimension of the block crystal initially, D

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On the sintering of ... S/021/61/000/004/011/013
D213/D303

is the coefficient of self-diffusion, δ is the atomic diameter, and σ the surface tension at the boundary of the crystal. X-ray investigation by Darwin's method yielded $A_0 = 5 \cdot 10^{-5}$ cm, σ depends on the angle of disorientation at the boundary of the crystal. For small angles the Shokli-Rid formula holds

$$\sigma = E_0\varepsilon(A - \ln\varepsilon)$$

where ε is the angle of disorientation and E_0 and A are constants. For the most probable value of ε, $\varepsilon \cong 5 - 10'$, $\sigma = 3$ ergs/cm^2. There are 2 figures, 1 table and 10 references: 8 Soviet-bloc and 2 non-Soviet-bloc. The reference to the English-language publication reads as follows: F.R.N. Nabarro, Rep. Conf. Strength Solids, London, 1948.

ASSOCIATION: Instytut metalokeramiki i spetsial'nykh splaviv AN URSR (Institute of Metallo-Ceramics and Special Alloys of the AS UkrSSR

SUBMITTED: December 28, 1960

Card 4/5

11600

S/021/61/000/006/007/009
D247/D501

AUTHORS: Skorokhod, V.V., and Fedorchenko, I.M., Member of AS UkrSSR

TITLE: The effect of space relations of phase particles on the sintering of two-phase mixtures

PERIODICAL: Akademiya nauk Ukrayinskoyi SSR, Dopovidi, no. 6, 1961, 745 - 747

TEXT: This article is a report of the continuation of previous investigations, in which the kinetics of particle coalescence in the system Cu-W were studied. In the publications calculations were presented on the assumption of spherical shape of the particles. In the present work the authors studied the effect of relative particle dimensions on the electrical conductivity of a series of sintered mixtures, as well as on the amount of their shrinkage during heating. In the first series of experiments the dependence of the conductivity on the size of particles of Cu and W was investigated. The results show that d_{cu}/d_{w} affects the conductivity of samples,

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The effect of space ... S/021/61/000/006/007/009
D347/D301

those with the fine Cu powder and coarser W particles having the highest conductivity. In the second series of experiments the dependence of sample contraction on the relative concentration of components was studied on samples with d_{Cu}/d_W ratios equalling 1 and 2. Samples with 10, 20, 30, 40 and 50 % of W were heated at 1000°C for 1 hour. The amount of shrinkage $\frac{\Delta L}{L_{Cu_L}}$ is plotted against tungsten content θ_2, the contraction of pure copper powder in these conditions being taken as unity. The graph shows that with the increase of tungsten content in the mixture, the amount of contraction is markedly decreased. The obtained results may be explained by means of following theoretical assumptions: If in a binary mixture in which two kinds of particles, differing in dimensions, are present (particles in each phase being of the same size) then the part of the surface of every particle of one phase, contacting a particle at the other phase would not be proportional to

Card 2/5

The effect of space ...

the volume of that phase as in the case of a mixture of identical particles. On the assumption that particles completely fill the mixture volume, it is probable that the contact surface of each phase would be proportional to the whole particle surface of that phase in a unit of volume

$$w_1 = \alpha \frac{\theta_1}{r_1}; \qquad w_2 = \alpha \frac{\theta_2}{r_2}$$

where w_1 and w_2 are the relative contact surfaces of all particles of the first and second phase respectively, θ_1 and θ_2 are the volume contents of each phase, r_1 and r_2 are the average radii of the first and second phase particles, and "α" is a proportionality constant. From the above equation with the aid of an additional one $w_1 + w_2 = 1$, it is possible to calculate w_1 and w_2 for the given θ_1, θ_2, r_1 and r_2 values. Where w_1 and w_2 are known it is possible

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The effect of space ...

to calculate the average contact values for particles of each phase, namely y_{11}, y_{12} and y_{22} and from those by means of a method published previously, to calculate the electrical conductivity of the given mixture (index 1 corresponds to copper, index 2 to tungsten). The experimentally found conductivity is in fairly satisfactory agreement with the theoretical. It is simpler to evaluate the effect of the diameter ratio of particles on the shrinkage during heating on the assumption that the latter is connected with the viscosity of the mixture. During heating, the tungsten particles behave as absolutely solid ones, so it might be assumed that the effect of tungsten content is connected with the dependence of the viscosity of the viscous medium on the volume content of the solid phase. It is assumed that in heterogeneous mixtures the total effective solid phase content θ_2 is equal to w_2. The dependence of the relative viscosity η_0/η, on the solid phase content θ_2 is shown graphically. Comparison of the two figures proves the validity of the above assumptions concerning the effect of the particle

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D247/D301

diameter ratio on the dependence of contraction during heating on the relative contents of components in two-phase mixtures. There are 2 figures, 2 tables and 6 Soviet-bloc references.

ASSOCIATION: Institut metalokeramiki i tspetsial'nikh splaviv AN URSR (Institute of Metalloceramics and Special Alloys, AS UkrSSR)

SUBMITTED: February 7, 1961

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18 1142

S/129/61/000/007/013/016
E073/E535

AUTHORS: Andriyevskiy, R.A. Candidate of Technical Sciences, Panichkina, V.V. Engineer and Fedorchenko, I.M., Academician AS UkrSSR

TITLE: Sintering of Iron Powder in Hydrogen with Additions of Hydrogen Chloride

PERIODICAL: Metallovedeniye i termicheskaya obrabotka metallov, 1961 No.7, pp.48-52

TEXT: Data on the influence of various methods of activated sintering on the magnetic properties of sintered briquettes and also on their specific surface (s) and carbon content are quoted from earlier work of the authors (Ref.1: Metallovedeniye i termicheskaya obrabotka metallov, No.12, 1960). It was found that introduction of hydrogen chloride into the sintering atmosphere has the most favourable influence on the magnetic properties of the sintered iron and this is attributed to smoothing the relief of the pores and refining the admixtures. The experiments were carried out with an iron powder of the following composition: 0.06% C, 0.3% Mn, 0.4% Si, 0.009% P,

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Sintering of Iron Powder an . S/129/61/000/007/013/016
E073/E535

97.7% Fe_{tot}. The magnetic properties were measured by a ballistic method, the specific surface was measured by the permeability method. The change in the specific surface, the coercive force and the UTS as a function of the volume concentration of the hydrogen chloride in the hydrogen were measured using the same methods as were used in the earlier work (Ref.1). Fig.2 shows the change in the specific surface of the specimen, s, m^2/g, during sintering as a function of the volume concentration of HCl (porosity of the pressed specimens about 30%; specific surface of the non-sintered specimens 0.17 m^2/g, sintering at 1200°C for 15 min). Fig.3 shows the coercive force, H_c, Oe, of briquettes as a function of the volume concentration, %, of the HCl in the sintering atmosphere, sintering at 1200°C: curve 1 - 15 min, initial porosity 30%, curve 2 - 15 min, initial porosity 23%, curve 3 - 3-4 hours, initial porosity 10%. Fig.4 shows the change in the strength, σ, kg/mm^2, of rolled strip specimens (7 x 1 x 60 mm) as a function of the HCl concentration in the sintering atmosphere for an initial porosity of 30%, a sintering temperature of 1200°C and a sintering time of 30 min. The

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presence of hydrogen chloride in the sintering atmosphere leads to the formation of iron chlorides on the active sections of the pore surface (mounds) and to their evaporation. The pores are smoothened out, reducing the specific surface and also the coercive force, the magnitude of which depends not only on the quantity of inclusions (pores) but also on their shape. The strength increases due to a drop in the role of stress concentra- ... Hydrogen chloride brings about more intensive refining of the iron specimens, manganese and silicon form easily evaporating chlorides. The refining also improves the magnetic characteristics. The optimum concentration of hydrogen chloride during sintering in a continuous gas flow is 5-10 ... If the HCl concentration is higher, recesses form on the surface of the specimen due to intensive erosion of the iron by hydrogen chloride vapours. Due to their high corrosive effect, the HCl vapours have to be removed by intensive blowing of hydrogen at the end of the sintering. If this is done for a duration of about 20 min (total duration of the sintering process 90 min), the specimens will have the same resistance to atmospheric corrosion as specimens sintered in hydrogen. Usually a single pressing and sintering

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Sintering of Iron Powder in ... 24198

S/129/61/000/007/003/010
E073/E535

is not sufficient to obtain sintered iron components with properties approaching the properties of compact components and, therefore, the specimens are usually twice pressed and sintered. The influence of preliminary sintering on the properties of the components after pressing and sintering was investigated and the results are tabulated. An improvement in the properties on sintering in a [illegible] atmosphere was observed only after sintering times exceeding 10 to 15 min, since shorter times are not sufficient for the reaction to proceed to any appreciable degree. An improvement in the properties by 25 to 40% can be achieved. The properties of the final product will be the better the higher the properties of the specimens after the first sintering. By using an atmosphere of H_2 + 10% HCl in the preliminary sintering (15-90 min at 1150°C to 1200°C), properties equalling those of cast, electrical steel (B) can be achieved after final pressing to a density of 7.7-7.6 and sintering at 1200°C for 4 hours. There are 4 figures, 2 tables and 6 references, 3 Soviet and 3 non-Soviet. The English-language reference reads as follows: Steinitz, ... Journal appl. Phys. v. 20, 1949.

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Sintering of Iron Powder in ... 24198
S/129/61/000/007/013/016
E073/E535

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR (Institute of Cermets and Special Alloys, AS UkrSSR)

Fig.2

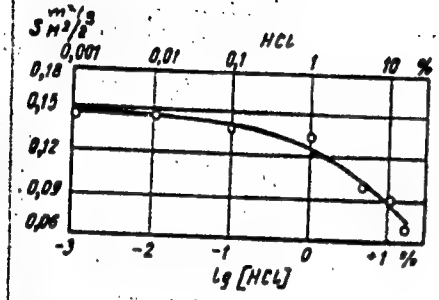


Fig.3

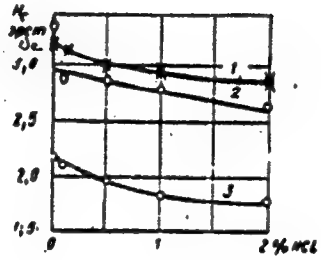
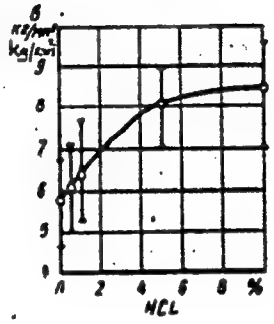


Fig.4



Card 5/5

FEDORCHENKO, Ivan Mikhaylovich, akademik; L'VOV, G.K.[L'vov, H.K.], otv. red.; TEPLYAKOVA, A.S., red.; MATVIICHUK, O.A., tekhn. red.

[Ceramic metal products in the national economy]Metalokeramichni vyroby u narodnomu hospodarstvi. Kyiv, 1962. 30 p. (Tovarystvo dlia poshyrennia politychnykh i naukovykh znan' Ukrains'koi RSR. Seriia 7, no.7) (MIRA 15:12)

1. Akademiya nauk Ukr. SSR (for Fedorchenko).
(Ceramic metals) (Metal powder products)

YEREMENKO, Valentin Nikiforovich; FEDORCHENKO, I.M., akademik, otv. red.; POKROVSKAYA, Z.S., red.izd-va; MATVEYCHUK, A.A., tekhn. red.

[Multicomponent titanium alloys] Mnogokomponentnye splavy titana. Kiev, Izd-vo Akad. nauk USSR, 1962. 209 p. (MIRA 15:6)

1. Akademiya nauk USSR (for Fedorchenko).
(Titanium alloys)

37569
S/226/62/000/001/006/014
1003/1201

18.8100
1.1600

Author. Katrus, O. A., Fedorchenko, I. M. and Vinogradov, G. A.

Title INVESTIGATION OF THE MAGNETIC PROPERTIES OF IRON POWDER STRIPS.

Periodical: *Poroshkovaya metallurgiya*, no. 1(7), 1962, 37–44

Text The porosity substantially affects the value of the coercive force. An increase in porosity by 2% increases the coercive force by approximately 0.1 oersted. When iron strips with a 25% porosity are sintered at 1200°C in an atmosphere of hydrogen having a dew point of −30°C, they lose all their carbon and oxygen, while sintering at lower temperatures (1000–1100°C) decreases the carbon content to 0.03–0.02% leaving the amount of oxygen unaltered. The kinetics of grain growth of poreless iron powder strips is similar to that of coarse-grained steels. The magnetic properties of poreless iron powder strips pre-sintered at 1200°C and above and finally heat-treated at 900–1000°C meets the ГОСТ 3836–47 (GOST 3836–47) requirements for low-carbon electrical grade sheet. There are 4 tables and 4 diagrams. English language reference: E. V Walker I. Howard, Iron and Steel Institute, V. 194 part I, 1960.

Association: Institut metallokeramiki i special'nykh splavov AN UkrSSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

Submitted: September 21, 1961

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S/226/62/000/002/003/010
I003/I203

AUTHOR: Fedorchenko, I. M.

TITLE: Investigation in the field of activated sintering. I. On shrinkages and the process mechanism

PERIODICAL: Poroshkovaya metallurgiya, no. 2, 1962, 27–37

TEXT: A survey of the literature data on activated sintering is given, supplemented by the results of studies by the author and his coworkers, aimed at increasing the efficiency of the process and improving on theretical knowledge. An analysis of the existing methods indicates the conditions of sintering at which the maximum properties can be obtained. For maximum density fine powders with defective crystalline lattices having a high shrinkage during the process should be used. The process should take place under conditions ensuring intense surface activity, leading to a higher density of the powders; smoothening of the surfaces of the pores; removal of impurities and facilitating the mutual slipping of particles. However, because these principles have not been sufficiently investigated, there may be other factors which should also be considered. Various methods are considered: reduction of oxides, sintering in the presence of hydrides, in atmospheres containing halides, and in the presence of a liquid phase. The influence of alloying elements and the physical methods of activation are also discussed. There are 5 figures.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED: December 11, 1961

Card 1/1

39925
S/226/62/000/003/003/014
I003/I203

1.1600

AUTHOR: Fedorchenko, I. M.

TITLE: Investigation of activated sintering processes

PERIODICAL: Poroshkovaya metallurgiya, no. 3, 1962, 17-23

TEXT: The possible limits of physicochemical properties of materials produced by activated sintering are discussed: Sintering in an atmosphere of moist hydrogen; in hydrogen with added HCl; in solid media containing either ammonium chloride or ammonium fluoride; sintering under pressure; sintering of powders whose particles are covered with another metal having a high coefficient of diffusion. The conclusion is that sintering chiefly on the surfaces of the powder particles can be expediently applied for manufacturing metal powder parts requiring a high porosity, while products requiring high density and physical-chemical properties similar to those of poreless materials are best produced by methods based on high mutual diffusibility of the materials and rearrangement of particles. Impregnation of sintered materials is a convenient means of producing metal powder articles having a high density. There are 5 figures and 2 tables.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED:

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39928

S/226/62/000/003/006/014
I003/1103

1.1600

AUTHOR: Fedorchenko, I.M. and Filatova N.A.

TITLE. Filtration properties of highly porous materials made of non-spherical iron powder particles

PERIODICAL: Poroshkovaya metallurgiya, no. 3, 1962, 49–54

TEXT This article furnishes data on the filtering capacity of iron powders produced in the Soviet Union, on which there is little information in the literature. Though the filtering is lower than that of other iron powders, the preparation of filters from iron scale powder is of interest because of the high porosity that can be produced and also because of its availability and low cost. It is shown that when powders are obtained by reducing iron scale filters with a filtration capacity similar to that of filters made from iron powder with spherical particles can be produced by selecting the optimum porosity of the powder material and the optimum filter plate. There are 5 figures and 1 table.

ASSOCIATION: Institut metallokeramiki i spetsial'nykh splavov AN USSR (Institute of Powder Metallurgy and Special Alloys AS UkrSSR)

SUBMITTED: January 4, 1962

Card 1/1

KATRUS, O.A.; FEDORCHENKO, I.M.; VINOGRADOV, G.A.

Investigating the magnetic properties of iron powder strips. (MIRA 15:8)
Porosh.met. 2 no.1:37-44 Ja-F '62.

1. Institut metallokeramiki i spetsial'nykh splavov AN UkrSSR.
(Metal powders—Magnetic properties)

ANDRIEVSKI, R.A. [Andriyevskiy, R.A.]; FEDORCENKO, I.M. [Fedorchenko, I.M.]

The creep processes at the sintering of metalloceramic briquets.
Analele metalurgie 16 no.2:124-136 Ap-Je '62.

FEDORCHENKO, I. M.

"Investigation of the oxidation process in porous materials."

TITLE: The Sixth All-Union conference on Powder Metallurgy (Held at Moscow, 21 November 1962

SOURCE: Poroshkovaya metallurgiya, no. 3, 1963. p. 110

YEREMENKO, V.N., otv. red.; FRANTSEVICH, I.N., red.; SAMSONOV, G.V., red.; PISARENKO, G.S., red.; FEDORCHENKO, I.M., red.; TRESVYATSKIY, S.G., red.; IVASHCHENKO, Yu.N., red.; POKROVSKAYA, Z.S., red.; RAKHLINA, N.P., tekhn. red.

[Surface phenomena in melts and in processes of powder metallurgy] Poverkhnostnye iavleniia v rasplavakh i protsessakh poroshkovoi metallurgii. Kiev, Izd-vo AN Ukr. SSR, 1963. 377 p. (MIRA 17:3)

1. Akademiya nauk URSR, Kiev. Instytut metalokeramiky i spetsial'nykh splaviv. 2. Institut metallokeramiki i spetsial'nykh splavov AN Ukr.SSR (for Yeremenko).

YEREMENKO, V.N., otv. red.; FRANTSEVICH, I.N., red.; SAMSONOV, G.V., red.; PISARENKO, G.S., red.; FEDORCHENKO, I.M., red.; TRESVYATSKIY, S.G., red.; IVASHCHENKO, Yu.N., red.; POKROVSKAYA, Z.S., red.

[Surface phenomena in molts and processes of powder metallurgy] Poverkhnostnye iavleniia v rasplavakh i protsessakh poroshkovoi metallurgii. Kiev, Izd-vo AN USSR, 1963. 456 p. (MIRA 18:1)

1. Akademiya nauk URSR, Kiev. Institut metallokeramiki i spetsial'nykh splaviv. 2. Institut metallokeramiki i spetsial'nykh splavov AN Ukr.SSR (for Ivashchenko, Yeremenko)

S/226/63/000/001/001/016
E111/E151

AUTHOR: Fedorchenko, I.M., Academician AS UkrSSR

TITLE: Possibilities and limitations of powder metallurgy in the production of new materials

PERIODICAL: Poroshkovaya metallurgiya, no.1, 1963, 3-12

TEXT: In his survey the author concentrates on the problems and their solution in the production of new materials, with little mention of the normal difficulties encountered in powder preparation, sintering and pressing. Alloys hardened by oxide inclusions can probably be obtained from most metals and alloys, but both development work and theoretical work are needed, e.g. on the mechanism of the strengthening effect of the disperse-phase inclusions, and the effect of size and spacing of inclusions on mechanical strength. Great progress has been made in the use of alloys of refractory compounds, e.g. borides, and such materials may eventually be used for pipes to transport liquid steel. The main problems with these alloys include: development of the necessary theory to enable the production of alloys with the required properties; study of the properties of suitable compounds

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Possibilities and limitations of ... S/226/63/000/001/001/016
E111/E151

and the development of industrial production methods; development of devices for direct conversion of heat into electricity. With the anti-friction materials the aim must be to make materials based on iron powder the rule, and those on non-ferrous metals the exception. In view of the economic importance of better sealing materials for turbines, special attention must be paid to the development of suitable materials for such conditions. With high-porosity filters the main problem is to develop tube filters 100 mm and over in diameter, and also large disks. Friction materials for brakes are required. Nickel strip may be produced from powder at half the cost of rolling from ingots. This technique needs extension and development. In general, powder metallurgy needs the theoretical foundation to be continually expanded.

SUBMITTED: October 15, 1962

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L 17118-63 EWP(k)/EWP(q)/EWT(m)/BDS AFFTC/ASD Pf-4/Pad JD/WH/RM/JG/JH
ACCESSION NR: AP3002385 S/0279/63/000/003/0003/0012

AUTHOR: Fedorchenko, I. M. (Kiev) 89 67

TITLE: Possibilities and problems of powder metallurgy in producing new materials

SOURCE: AN SSSR. Izv, Otd. tekhnicheskikh nauk. Metallurgiya i gornoye delo, no. 3, 1963, 3-12

TOPIC TAGS: powder metallurgy, alloy, dispersion enclosure, refractory enclosure, friction material, rolling

ABSTRACT: This paper was presented at the joint session of OTN of the USSR and the Ukrainian SSR in October 1962. Powder metallurgy (PM) allows a greater variety in chemical composition, in combining diverse materials unsuitable for fusion, and in creating materials possessing specific structural properties. PM brought about the development of alloys strengthened by dispersed inclusions of a solid phase, as exemplified by SAP, which contains 15% of aluminum oxide, as well as by the American method of incorporating oxides, carbides and nitrides of uranium and thorium into nuclear reactor fuel. In the same category should be listed the in-

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L 17118-63
ACCESSION NR: AP3002385

clusions of Ni, Co, Mn, Ti, V and Cr into aluminum and beryllium alloys. In the USA much attention is given to the application of PM for the hardening of copper, lead, and cobalt by the incorporation of such high-melting metals as Mo and W. The need for high-refractory materials in metallurgy is being filled by PM production of zirconium borides and similar substances. The borides and carbides produced by the PM method are also the answer to some of the problems facing the gas turbine and rocket installations, where materials are needed to withstand temperatures of 700-850C. Some of these alloys are also remarkable for their strength. Thus, the double boride of titanium and chromium can withstand bending stress up to 25.3 kg/mm^2 at 1100C. PM is also useful in the production of cutting and drilling alloys on a boride base with molybdenum, while carbides of boron and silicon are used as substitutes for diamonds. The specific properties of molybdenum disilicate and zirconium boride permit their use in electric furnace installations at temperatures as high as 1650 and 2500C respectively. The urgent problems in this field are: 1) to work out a theoretical foundation for creating alloys of given specifications from refractory compounds; 2) the broad study of the properties of many refractory compounds; 3) the development of their production techniques; and 4) the working out of thermo-generator units based on thermoelectric, thermionic, and magnetohydrodynamic principles of transformation for the conversion

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of heat energy into electric energy. In the field of antifriction compounds, the main problem is the production of materials with an iron powder base, where today nonferrous alloys of the babbitt and bronze types are dominant. It is also important to apply the PM technique to the development of sealing materials for gas and steam turbines, materials that would be resistant to corrosion and capable of withstanding the gas blow-off, while standing up well under the impact of blades. Attention should also be given to the need for porous materials to be used in insulation, filtering, etc. Such materials could be developed by the PM procedure. Alloys which can resist high friction (such as linings for brakes in various installations) are among the items which need improvement. A bright outlook exists today for developing PM by the rolling procedure which offers many advantages over the sintering method. Flat bar copper rolled from powder is electrotechnically superior to smelted copper, and the cost of one ton of sheet nickel rolled from powder is about one half as high as that of nickel rolled from an ingot. The American mills are reported to be producing stainless steel by the PM procedure more economically than from ingots. The production of a bimetal steel-aluminum wire by the rolling procedure is in progress at the SSSR. The author lists a number of other problems, both theoretical and technical, that are facing the

L 17118-63
ACCESSION NR: AP3002385

powder metallurgy and that will have to be solved.

ASSOCIATION: none

SUBMITTED: 00	DATE ACQ: 12Jul63	ENCL: 00
SUB CODE: ML	NO REF SOV: 004	OTHER: 003

Card 4/4

L 12887-63 EWP(q)/EWT(m)/BDS AFFTC/ASD JD/HW-2/JG
ACCESSION NR: AP3001953 S/0226/63/000/003/0052/0062

AUTHOR: Fedorchenko, I. M.; Filatova, N. A.; Dmitriyeva, N. A.; Sleptsova, N. P

TITLE: Manufacture and properties of sintered filters 64 63

SOURCE: Poroshkovaya metallurgiya, no. 3, 1963, 52-62

TOPIC TAGS: sintered filter, spherical metallic powder, inert filler, Fe, Ni, Cu, bronze, phosphorus, strength, permeability, porosity particle size

ABSTRACT: The authors investigated the method of producing sintered filters by melting metallic powder mixed with an inert filler. This mixture was heated to 373-423K above the melting temperature of the metal. Spherical powders of iron, nickel, copper and bronze were prepared by this method. Carbon black was used as a filler in processing iron powder; calcium carbonate was used with nickel powder. The best temperature for melting nickel was 1823K; for bronze, 1223K; and for copper, 1473K. Activated sintering improves the strength of products and preserves their permeability. The strength of the filters was also increased by adding ammonium phosphate, cuprous chloride and tin to the metallic powders, and became much higher than that of filters made of paper, carton, or fabric. Permeability and filtration ability of sintered filters are

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L 12887-63
ACCESSION NR:AP3001953

determined by the shape and size of the particles from which the filters are made. Filters with 35-40% porosity are most effective. The change of particle size from 45 to 250-450 Microns raises the permeability up to 10 times. The described method for obtaining spherical powders is recommended as equal to the method of metal pulverization. Sintered filters of various permeabilities, particle sizes, porosities, and thicknesses may be selected for different working requirements. Orig. art. has: 13 figures and 1 table.

ASSOCIATION: Institut metallokeramiki i spetsial'ny*kh splavov AN USSR (Institute of Metal-Ceramics and Special Alloys, Academy of Sciences AN UkrSSR)

SUBMITTED: 11Sep62	DATE ACQ: 11Jul63	ENCL: 00
SUB CODE: ML	NO REF SOV: 007	OTHER: 003

Card 2/2

BR

ACCESSION NR: AT4013961 S/2659/63/010/000/0252/0257

AUTHOR: Fedorchenko, I. M.; Lyapunov, A. P.; Skorokhod, V. V.

TITLE: The nature of the high temperature oxidation of porous nickel

SOURCE: AN SSSR. Institut metallurgii. Issledovaniya po zharoprochnym splavam, v. 10, 1963, 252-257

TOPIC TAGS: nickel, porous nickel, nickel oxidation, oxidation, high temperature oxidation

ABSTRACT: Porous products manufactured by powder metallurgical methods are finding even wider use in various fields of engineering. In many cases these products viz. metal-ceramic bearings, filters, and packings, work at high temperatures. The authors have investigated the oxidation of porous products to determine the specific features of this process at high temperatures and to observe the qualitative variations connected with internal oxidation of the sample. The process of oxidation of porous bodies differs greatly from that of compact bodies. This is expressed by disruption of the normal course of the temperature-oxidation curve and by a variation in the observed oxidation law. These features of the oxidation of porous bodies can be explained by the decrease in the surface area taking part

Card 1/2

ACCESSION NR: AP4029207 S/0226/64/000/002/0051/0056

AUTHOR: Fedorchenko, I. M.; Lyapunov, A. P.

TITLE: On the effects of self-heating and shrinkage with high temperature oxidation of porous nickel

SOURCE: Poroshkovaya metallurgiya, no. 2, 1964, 51-56

TOPIC TAGS: self heating, shrinkage, oxidation, nickel porosity

ABSTRACT: The results of the authors' investigation revealed that temperature increases spontaneously during heating at a temperature range of 400-800°C and attains its maximum at 500-600°C. The oxidation of nickel, estimated by weight increase, has a non-monotonous character with a temperature increase. The maximum degree of oxidation is observed at the 650-700°C range; it lessens, however, at higher temperatures. The kinetics depend upon porosity and cross-section of the sample; as the thickness increases, the relative degree of oxidation decreases. Heating in an air medium with oxidation results in shrinkage of the sample, the amount of which increases with temperature and porosity. The monotonous increase in shrinkage is disrupted in the 700-750°C range by oxidation which results in significantly less shrinkage. Orig. art. has: 5 figures.

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ACCESSION NR: AP4029207

ASSOCIATION: Institut problem materialovedeniya AN SSSR (Institute of Metal Behavior Problems, AN SSSR)

SUBMITTED: 18Feb63 DATE ACQ: 28Apr64 ENCL: 00

SUB CODE: ML NO REF SOV: 003 OTHER: 003

Card 2/2

FEDORCHENKO, I.M., akademik; DRAYGOR, D.A. [Draihcr, D.A.]; FILATOVA, N.A. [Filatova, N.O.]; KHIMICH, G.S. [Khimich, H.S.]; AFANAS'YEV, V.F. [Afanas'iev, V.F.]

Investigating the wear of ceramic metal materials in various gaseous media. Dop. AN URSR no.9:1168-1172 '64.

(MIRA 17:11)

1. Institut problem materialovedeniya AN UkrSSR. 2. AN UkrSSR (for Fedorchenko).

FEDORCHENKO, I. M.; PUGINA, L. I.

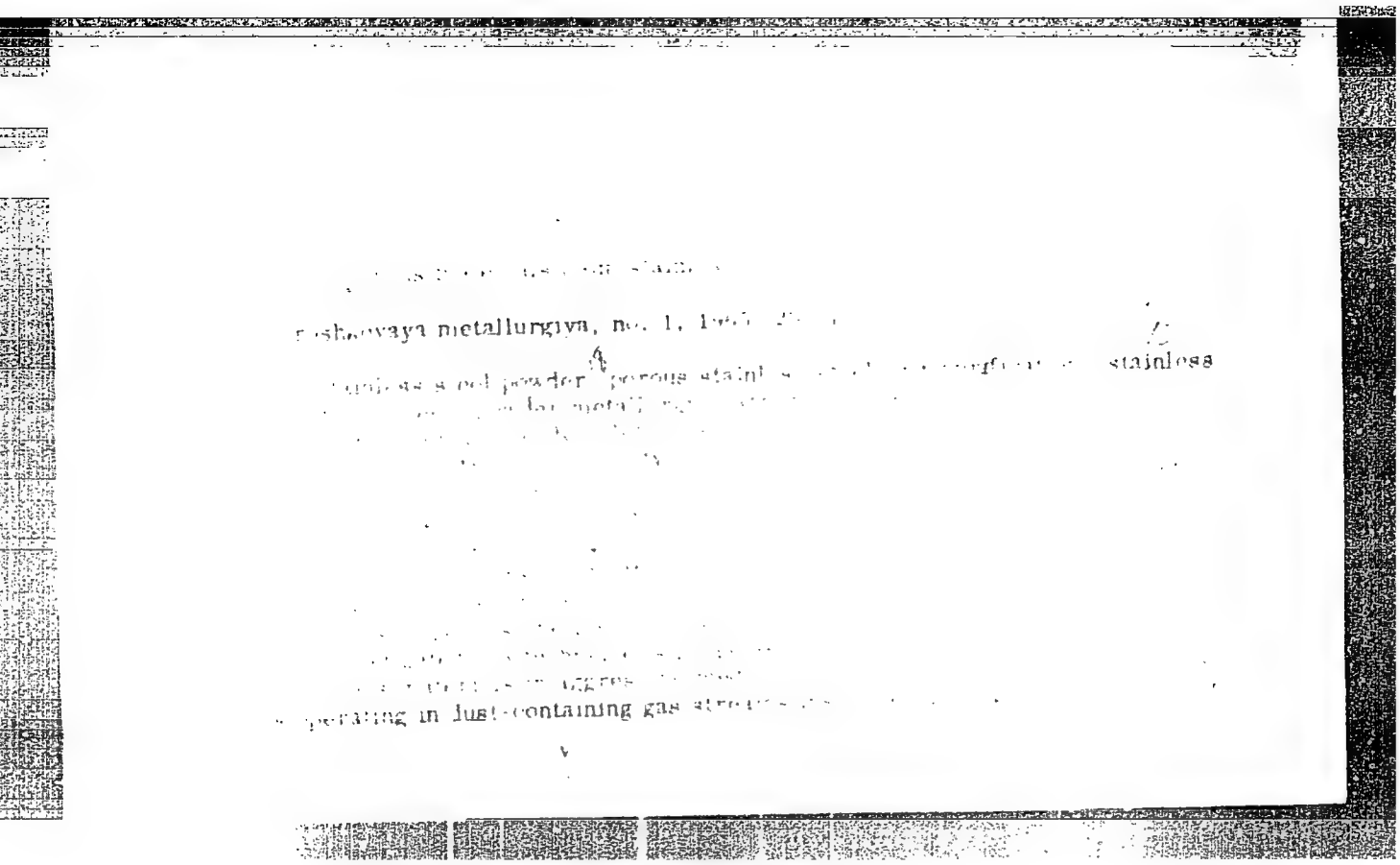
"Metall-grafit-verbundwerkstoffe mit hohem grafitgchalt."

report submitted for 3rd Intl Conf on Powder Metallurgy, Eisenach, E. Germany, 13-15 May 1965.
Kiev, UkSSR.

FEDORCHENKO, I. M.; PUGIN, V. S.

"Porige pulvermetallurgische werkstoffe fur die gasreinigung."

report submitted for 3rd Intl Conf on Powder Metallurgy, Eisenach, E. Germany, 13-15 May 1965.
Kiev, UkSSR.



r shkovaya metallurgiya, no. 1, [illegible]

[illegible] stainless

[illegible] operating in dust-containing gas [illegible]

ACCESSION NR: AP5004437

[illegible] concentrated by reverse blowing. A method [illegible] calculating the interval [illegible] positions of [illegible] [illegible] monatheir [illegible]

L 32689-65 EPF(c)/EPF(n)-2/EPR/EWG(j)/EPA(s)-2/EPA(w)-2/EWP(k)/EWT(m)/
EWP(b)/T/EWA(d)/EWP(e)/EWP(w)/EWP(t) Pf-4/Pr-4/Ps-4/Pt-10/Pu-4/Pab-10
UJP(c) HW/WW/JD/JG
ACCESSION NR: AP5004439 S/0226/65/000/001/0045/0051

AUTHOR: Fedorchenko, I.M.; Chayka, B.I.

TITLE: Mechanical properties of cermet steels obtained by sintering mixtures of iron and graphite powders

SOURCE: Poroshkovaya metallurgiya, no. 1, 1965, 45-51

TOPIC TAGS: powder metallurgy, cermet steel, steel mechanical property, sintered steel, iron powder, carbon burnup, steel heat treatment

ABSTRACT: A study of the properties of steel samples made by sintering mixtures of iron powder with graphite or carbon black showed the possibility of obtaining a structural material that is stronger than materials made from pure sintered iron not hardened by carbon. Values of the strength and plasticity of the new material are estimated as a function of porosity and certain technological factors. The highest values of the mechanical properties were found in a material of 12% porosity containing 1.0% graphite in the initial state and sintered at 1200C. When carbon is introduced into the initial sintering mixture in the form of graphite or carbon black, the burning up of the latter and its activity must be taken into account. The sintering medium was found to have a

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ACCESSION NR: AP5004430

substantial effect on the degree of burnup of the carbon introduced into the mixture. A good medium is reformed natural gas, which reduces the burning up of carbon, as opposed to hydrogen. For industrial applications, an iron powder containing 0.9% graphite is recommended. The sintering should be carried out at 1100-1200C, and if it is necessary to improve the mechanical properties, hardening with high-temperature tempering is recommended. Orig. art. has: 8 figures and 2 tables.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Materials Science Institute, AN UkrSSR)

SUBMITTED: 16Jan64 ENCL: 00 SUB CODE: MM

NO REF SOV: 002 OTHER: 012

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L 44728-65 EWG(j)/EWP(e)/EPA(s)-2/EWT(m)/EPF(c)/EWP(i)/EPF(n)-2/EWA(d)/
EPR/EPA(w)-2/T/EWP(t)/EWP(z)/EWP(b) Pr-4/Ps-4/Pt-7/Pu-4/Pab-10/Pad
[illegible] WW/JD/HW/JG/WB

ACCESSION NR: AP5010406 UR/0226/65/000/004/0057/0060

AUTHOR: Fedorchenko, I. M.; Denisenko, E. T.; Kiroshnikov, V. N.

TITLE: Changes in the mechanical properties of packing materials in the process of their oxidation. Report No. 2

SOURCE: Poroshkovaya metallurgiya, no. 4, 1965, 57-60

TOPIC TAGS: turbine shroud, Brinell hardness, nickel graphite packing, shroud liner, graphite burnout, bulk oxidation, surface oxidation, bending strength, cermet bushings, packing material

ABSTRACT: The determination of the service life of steam-turbine packings requires knowledge of their mechanical and physical properties in the original condition and following longtime performance at high temperatures in the air and steam. The authors investigated the Brinell hardness, bending strength and fittability (notchability) of sintered nickel-base cermet bushings as a function of temperature and oxidation time. The specimens investigated were first exposed to oxidation for up to 100 hr in air at 550°C and for up to 2000 hr in steam at 550°C. The following compositions were tested: nickel-graphite, nickel-zinc oxide, nickel-talc. It is shown that the wear of turbine-shroud liners can be reduced to a minimum by using

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ACCESSION NR: AP5010406

a packing material of a hardness of roughly not more than 60 H_B units. Of the compositions investigated, the nickel-graphite composition satisfies best this requirement. Oxidation greatly affects the hardness and strength of the materials. The increase in hardness on oxidation is a direct function of the degree of oxidation of the material, and of the nature of the material. In the packing materials containing no graphite hardness increases far beyond the permissible limits, whereas in the packing materials containing graphite the increase in hardness is checked by the burnout of the graphite. The nature of oxidation also is a factor: at 550°C in a steam medium, bulk oxidation leads to an increase in strength, whereas surface oxidation leads to a decrease in strength. Orig. art. has: 5 figures, 1 table.

ASSOCIATION: Institut problem materialovedeniya AN UkrSSR (Institute of Problems in the Study of Materials, AN UkrSSR)

SUBMITTED: 05Apr64 ENCL: 00 SUB CODE: MM

NO REF SOV: 002 OTHER: 000

Card 2/2 mb

MIROLYUBOV, V., polkovnik; FEDCHENKO, F., polkovnik

Communist beliefs. Av. i kosm. no.1:57-61 Ja '66. (MIRA 19:1)

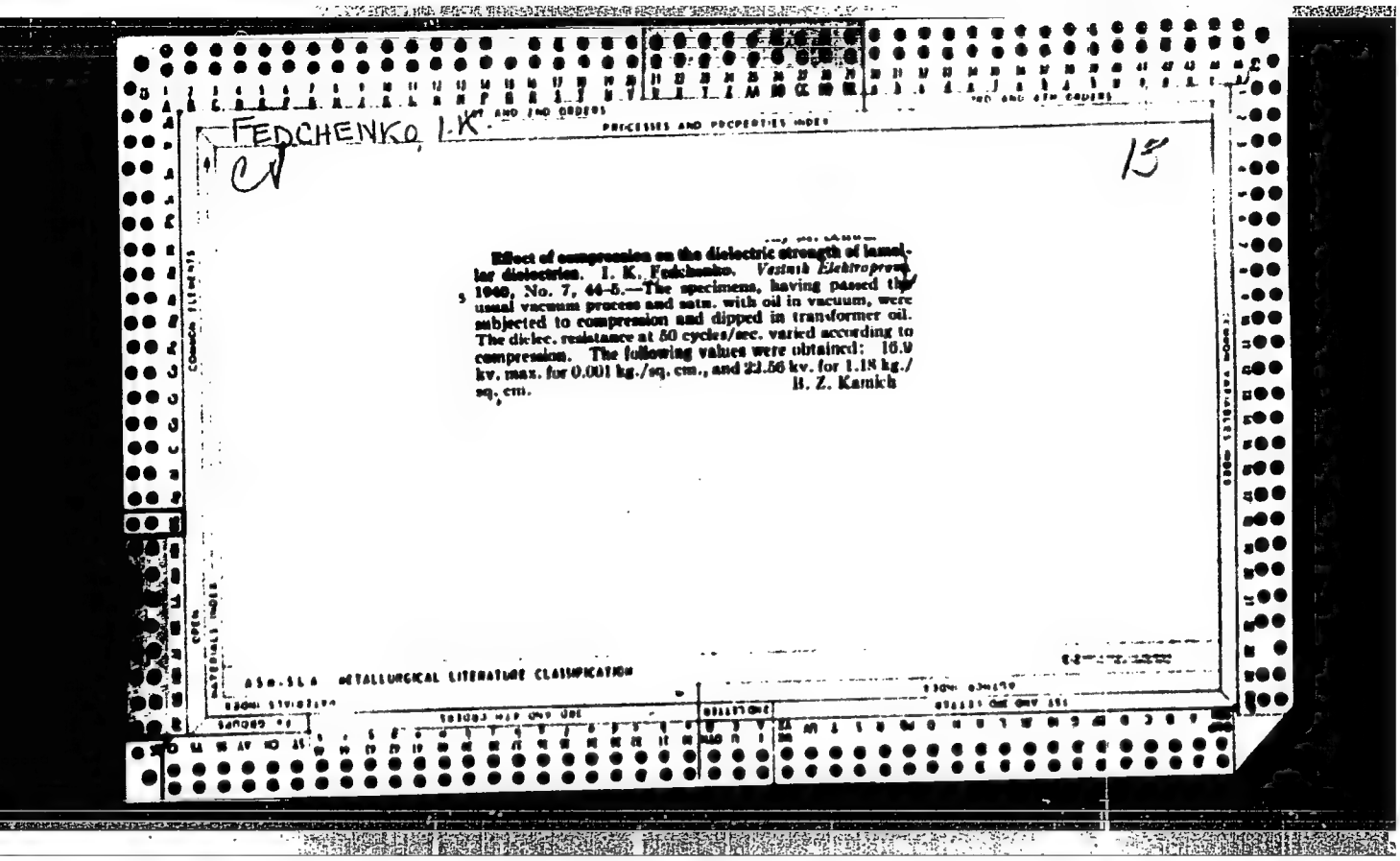
FEDCHENKO, I. I.

FEDCHENKO, I. I. Volga. Moskva, Izd. Min. rechn. flota SSSR., 1947. 272 p.

SO: LC, Soviet Geography, Part I, 1951; Uncl.

FEDCHENKO, Ivan Kirillovich, doktor tekhn. nauk; GORODETSKIY, P.G., kand. tekhn. nauk, retsenzent

[Theory of ground conductivity] Teoriia zemlianogo provoda. Kiev, Tekhnika, 1964. 109 p. (MIRA 17:9)



FEDCHENKO, I.K.

CA

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Effect of compression on the dielectric strength of lamellar dielectrics. I. K. Fedchenko. *Vestnik Elektroprom.* 1940, No. 7, 44–5.—The specimens, having passed the usual vacuum process and satn. with oil in vacuum, were subjected to compression and dipped in transformer oil. The dielec. resistance at 50 cycles/sec. varied according to compression. The following values were obtained: 16.9 kv. max. for 0.001 kg./sq. cm., and 23.56 kv. for 1.18 kg./sq. cm.

B. Z. Kamich

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

FEDCHENKO, Docent I. K.

231T26

USSR/Electricity - Insulators X Ray Tests

Oct 52

"A New Method for Prophylactic Tests of Equipment Insulators," Docent I. K. Fedchenko, Cand Tech Sci, M. Ye. Iyerusalimov

"Elektrichestvo" No 10, pp 45-49

Discusses a method for X-ray tests of mastic-filled equipment insulators which was developed in the High-Voltage Lab, Kiev Polytech Inst. Establishes the optimum conditions for penetration of the complex structure porcelain-mastic-hetinax

231T26

[the latter is a laminated plastic made from paper and synthetic bakelite resin]. Submitted 22 Nov 51.

231T26

IERUSALE.OV, M. Ye.; FEDCHENKO, I. K.

Electric Lines

Controlling the condition of high voltage lead-ins, Elek. sta. 2., No. 1, 1953.

9. Monthly List of Russian Accessions, Library of Congress, May 1953. Unclassified.

FEDCHENKO,I.K.

AID P - 2424

Subject : USSR/Electricity

Card 1/1 Pub. 26 - 23/33

Authors : Ierusalimov, M. E., Kand. Tech. Sci., and Fedchenko, I.K., Kand. Tech. Sci.

Title : On co-ordination of transmission line insulation

Periodical : Elek sta 5, 54-55, My 1955

Abstract : The authors criticize M. M. Nekrasov's article appearing in the No 12, 1953 issue of this journal on co-ordination of insulation of transmission lines. They maintain that Nekrasov's suggestions if applied would aggravate the situation. The article is accompanied by an answer from Nekrasov.

Institution: None

Submitted : No date

FEDCHENKO, I.K., dekter tekhnicheskikh nauk, professor; IYERUSALIMOV, M.Ye., kandidat tekhnicheskikh nauk, dotsent; ANDRIYASHEV, K.Ya., inzhener; MARKEVICH, V.P., inzhener.

X ray examination of high-voltage insulators. Elektrichestvo no.8: 78-79 Ag '56. (MLRA 9:10)

1.Kiyevskiy ordena Lenina politekhnicheskiy institut (for Fedchenko, Iyerusalimov. 2.Kiyevenergo (for Andriyashev, Markevich).
(Electric insulators and insulation) (X rays--Industrial applications)

FEDCHENKO, I. K.

112-2-2669

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 2, p.7 (USSR)

AUTHOR: Fedchenko, I.K.

TITLE: A New Method of Determining the Equivalent Cross Section of a "Ground Lead" when a Sinusoidal Current is Flowing in a Conductor "Ground-Circuit" (first rule) (Novvy metod opredeleniya ekvivalentnogo poperechnogo secheniya "zemlyanogo provoda" pri protekanii v tsepi "provod-zemlya" sinusoidal'nogo toka (pervoye pravilo)

PERIODICAL: Izv. Kiyevsk. politekhn. in-ta, 1956, Nr 17, pp. 19-29

ABSTRACT: The author maintains that when there is a preponderance of conduction currents in the ground, the area of the equivalent cross section of the wave zone in the ground for a "conductor-ground" line is directly proportional to double the circumference traced by a radius equal to the

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112-2-2669

A New Method of Determining the Equivalent Cross Section of a "Ground Lead" when a Sinusoidal Current is Flowing in a Conductor "Ground-Circuit" (first rule) (Cont.)

mean height of suspension of the line above the ground, and inversely proportional to the absorption coefficient in the ground. (unsigned).

Card 2/2

FEDCHENKO, I. K.

112-2-2670

Translation from: Referativnyy Zhurnal, Elektrotekhnika, 1957, Nr 2, p. 7 (USSR)

AUTHOR: Fedchenko, I.K.

TITLE: A New Method of Determining the Equivalent Depth of Occurrence of a Concentrated Back Current in the Ground (second rule) (Novyy metod opredeleniya ekvivalentnoy glubiny zaleganiya sosredotochennogo toka v zemle (vtoroye pravilo)

PERIODICAL: Izv. Kiyevsk. politekh. in-ta, 1956, Nr 17, pp. 30-36

ABSTRACT: The author maintains that the equivalent depth of occurrence in the ground of a back current concentrated in the electrical center of gravity of the wave zone in

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A New Method of Determining the Equivalent Depth of Occurrence of a Concentrated Back Current in the Ground (second rule) (Cont.)

the ground represents the moment arm of this current in relation to the surface of the earth (the coordinate of the electrical center of gravity) and is numerically equal to the reciprocal of the coefficient of absorption in the earth. (unsigned).

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FEDCHENKO, I.K.

New method for calculating the resistance and inductance of the ground as a return conductor based on its equivalent geometrical parameters. Izv. KPI 22:355-379 '57. (MIRA 11:3)
(Electric currents--Grounding)

8(3) SOV/112-59-3-4366

Translation from: Referativnyy zhurnal. Elektrotekhnika, 1959, Nr 3, pp 12-13 (USSR)

AUTHOR: Fedchenko, I. K., and Iyerusalimov, M. Ye.

TITLE: Investigation Into the Cause of Deterioration of High-Voltage Porcelain Insulators on the Oil Circuit Breakers (Issledovaniye prichin razrusheniya farforovykh izolyatorov vysokogo napryazheniya na maslyanykh vyklyuchatelyakh)

PERIODICAL: Izv. Kiyevsk. politekhn. in-ta, 1957, Vol 22, pp 380-393

ABSTRACT: At Kyyvenergo (Kiyev Power System) substations, cracks in bushing porcelain insulators of VMD-35 oil circuit breakers were detected. The cracks started at the support flange and spread upward over the porcelain. By using the x-ray flaw-detection method, it was found that the mortar used for fastening the porcelain penetrated inside the bushing and filled a part of the hollow space between the "getinaks" core and the porcelain wall. The cement belt extended over the flange by 2-12 cm; in some bushing insulators, the

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8(3) SOV/112-59-3-4366

Investigation Into the Cause of Deterioration of High-Voltage Porcelain Insulators . . .

cement layer reached the level of the first insulator rib. The cement belt inside the insulator crowded out the insulating compound and caused cracking of the porcelain because the temperature coefficient of expansion for cement is considerably higher than that for porcelain. Computations have shown that with the maximum permissible temperature +30°C of the current-carrying tube and the temperature +35°C of the ambient air the tensile stress on the internal surface of the porcelain may go as high as 231 kG/cm^2, which considerably exceeds the permissible value. Bushing tests on other oil circuit breakers made by conventional methods (measurement of tgδ, high-voltage test) did not detect the cement-belt faulty insulators. Roentgenoscopy of 32 insulators helped to detect 20 faulty insulators with cement between the porcelain bushing and the "getinaks" insulation. Insulator roentgenoscopy was made by means of a portable x-ray outfit in a housing 70 x 30 x 30 cm, weighing 40 kg. The insulator roentgenoscopy was performed with a voltage 60 kv on the x-ray tube.

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the maximum tube current 5 ma, at a focal length of 30 cm, and with an exposition of 3 minutes. The x-ray-outfit transformer was supplied from a 220 v line. The roentgenoscopy of 6 bushings of one circuit breaker took less than one hour. Bibliography: 8 items.

N.V.N.

FEDCHENKO, I.K.

New method for calculating the current density for a two-layer ground structure with different conductivity of layers. Izv. KPI 26:407-423 '57. (MIRA 11:6)

1.Kafedra tekhniki vysokikh napryazheniy Kiyevskogo politekhnicheskogo instituta.

(Electric currents--Grounding)

FEDCHENKO, I.K.

New method for calculating the electric constants R_{dv}, H_{dv}, and L_{dv} for a two-layer ground. Izv. KPI 26:425-440 '57. (MIRA 11:6)

1. Kafedra tekhniki vysokikh napryazheniy Kiyevskogo politekhnicheskogo instituta.

(Electric currents, Grounding)

FEDCHENKO, I.K., doktor tekhn. nauk, prof.

Use of gamma-ray flaw detection in electric engineering. Izv. vys. ucheb. zav.; energ. no. 1:52-58 Ja '58. (MIRA 11:7)

1. Kiyevskiy ordena Lenina politekhnicheskiy institut.
(Electric apparatus and appliances--Testing)
(Gamma rays--Industrial applications)

8 (0)

AUTHORS: Greben', I. I., Kalnibolotskiy, M. L., SOV/105-59-6-23/28
Nesterenko, A. D., Postnikov, I. M.,
Fedchenko, I. K., Kholmskiy, V. G., Chizhenko, I. M., and Others

TITLE: Professor N. N. Vasil'yev (Professor N. N. Vasil'yev). On His 70-th Birthday (K 70-letiyu so dnya rozhdeniya)

PERIODICAL: Elektrichestvo, 1959, Nr 6, p 92 (USSR)

ABSTRACT: Nikolay Nikolayevich Vasil'yev began his career in 1914, after having completed his studies at the Petrogradskiy politekhnicheskiy institut (Petrograd Polytechnic Institute), as head of the electric workshop of the Central Workshop of the South-Western Railroad in Kiyev. From 1927 to 1930 he also taught at the Kiyevskiy politekhnicheskiy institut (Kiyev Polytechnic Institute). In 1930 he was appointed Docent in ordinary and in 1931 Professor at the Chair of Electrical Machines at the same Institute. In 1937 he was appointed head of the newly established Chair for the Electrification of Industrial Enterprises. He installed a laboratory with this chair. During the second world war he was evacuated to Tashkent with the entire Institute. After his return he kept the same chair. He wrote more than 20 scientific publications, and constantly endeavored to

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